SEQUENCE LISTING

<110> Matsumoto et al.

<120> NOVEL GUANOSINE TRIPHOSPHATE-BINDING PROTEIN-COUPLED RECEPTORS AND GENES THEREOF, AND PRODUCTION AND USES THEREOF

<130> 62514

<140>
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<150> PCT/JP00/09408
<151> 2000-12-28

<150> JP 1999-375152
<151> 1999-12-28

<150> JP 2000-101339
<151> 2000-03-31

<160> 63

<170> PatentIn Ver. 2.1

<210> 1
<211> 371
<212> PRT
<213> Homo sapiens

<400> 1

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Gln Thr Leu Asp Ser Ser Pro Val Ala Cys Thr Glu Thr Val Thr Phe
             20                  25                  30

Thr Glu Val Val Glu Gly Lys Glu Trp Gly Ser Phe Tyr Tyr Ser Phe
         35                  40                  45

Lys Thr Glu Gln Leu Ile Thr Leu Trp Val Leu Phe Val Phe Thr Ile
     50                  55                  60

Val Gly Asn Ser Val Val Leu Phe Ser Thr Trp Arg Arg Lys Lys Lys
 65                  70                  75                  80

Ser Arg Met Thr Phe Phe Val Thr Gln Leu Ala Ile Thr Asp Ser Phe
                 85                  90                  95

Thr Gly Leu Val Asn Ile Leu Thr Asp Ile Asn Trp Arg Phe Thr Gly
            100                 105                 110

Asp Phe Thr Ala Pro Asp Leu Val Cys Arg Val Val Arg Tyr Leu Gln
        115                 120                 125
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Val Val Leu Leu Tyr Ala Ser Thr Tyr Val Leu Val Ser Leu Ser Ile
    130                 135                 140

Asp Arg Tyr His Ala Ile Val Tyr Pro Met Lys Phe Leu Gln Gly Glu
145                 150                 155                 160

Lys Gln Ala Arg Val Leu Ile Val Ile Ala Trp Ser Leu Ser Phe Leu
                165                 170                 175

Phe Ser Ile Pro Thr Leu Ile Ile Phe Gly Lys Arg Thr Leu Ser Asn
            180                 185                 190

Gly Glu Val Gln Cys Trp Ala Leu Trp Pro Asp Asp Ser Tyr Trp Thr
        195                 200                 205

Pro Tyr Met Thr Ile Val Ala Phe Leu Val Tyr Phe Ile Pro Leu Thr
    210                 215                 220

Ile Ile Ser Ile Met Tyr Gly Ile Val Ile Arg Thr Ile Trp Ile Lys
225                 230                 235                 240

Ser Lys Thr Tyr Glu Thr Val Ile Ser Asn Cys Ser Asp Gly Lys Leu
                245                 250                 255

Cys Ser Ser Tyr Asn Arg Gly Leu Ile Ser Lys Ala Lys Ile Lys Ala
            260                 265                 270

Ile Lys Tyr Ser Ile Ile Ile Ile Leu Ala Phe Ile Cys Cys Trp Ser
        275                 280                 285

Pro Tyr Phe Leu Phe Asp Ile Leu Asp Asn Phe Asn Leu Leu Pro Asp
    290                 295                 300

Thr Gln Glu Arg Phe Tyr Ala Ser Val Ile Ile Gln Asn Leu Pro Ala
305                 310                 315                 320

Leu Asn Ser Ala Ile Asn Pro Leu Ile Tyr Cys Val Phe Ser Ser Ser
                325                 330                 335

Ile Ser Phe Pro Cys Arg Glu Gln Arg Ser Gln Asp Ser Arg Met Thr
            340                 345                 350

Phe Arg Glu Arg Thr Glu Arg His Glu Met Gln Ile Leu Ser Lys Pro
        355                 360                 365

Glu Phe Ile
    370


<210> 2
<211> 363
<212> PRT
<213> Homo sapiens

<400> 2
Met Gly Pro Gly Glu Ala Leu Leu Ala Gly Leu Leu Val Met Val Leu
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Ala Val Ala Leu Leu Ser Asn Ala Leu Val Leu Leu Cys Cys Ala Tyr
            20                  25                  30

Ser Ala Glu Leu Arg Thr Arg Ala Ser Gly Val Leu Leu Val Asn Leu
        35                  40                  45

Ser Leu Gly His Leu Leu Leu Ala Ala Leu Asp Met Pro Phe Thr Leu
    50                  55                  60

Leu Gly Val Met Arg Gly Arg Thr Pro Ser Ala Pro Gly Ala Cys Gln
65                  70                  75                  80

Val Ile Gly Phe Leu Asp Thr Phe Leu Ala Ser Asn Ala Ala Leu Ser
                85                  90                  95

Val Ala Ala Leu Ser Ala Asp Gln Trp Leu Ala Val Gly Phe Pro Leu
            100                 105                 110

Arg Tyr Ala Gly Arg Leu Arg Pro Arg Tyr Ala Gly Leu Leu Leu Gly
        115                 120                 125

Cys Ala Trp Gly Gln Ser Leu Ala Phe Ser Gly Ala Ala Leu Gly Cys
    130                 135                 140

Ser Trp Leu Gly Tyr Ser Ser Ala Phe Ala Ser Cys Ser Leu Arg Leu
145                 150                 155                 160

Pro Pro Glu Pro Glu Arg Pro Arg Phe Ala Ala Phe Thr Ala Thr Leu
                165                 170                 175

His Ala Val Gly Phe Val Leu Pro Leu Ala Val Leu Cys Leu Thr Ser
            180                 185                 190

Leu Gln Val His Arg Val Ala Arg Arg His Cys Gln Arg Met Asp Thr
        195                 200                 205

Val Thr Met Lys Ala Leu Ala Leu Leu Ala Asp Leu His Pro Ser Val
    210                 215                 220

Arg Gln Arg Cys Leu Ile Gln Gln Lys Arg Arg Arg His Arg Ala Thr
225                 230                 235                 240

Arg Lys Ile Gly Ile Ala Ile Ala Thr Phe Leu Ile Cys Phe Ala Pro
                245                 250                 255

Tyr Val Met Thr Arg Leu Ala Glu Leu Val Pro Phe Val Thr Val Asn
            260                 265                 270

Ala Gln Trp Gly Ile Leu Ser Lys Cys Leu Thr Tyr Ser Lys Ala Val
        275                 280                 285

Ala Asp Pro Phe Thr Tyr Ser Leu Leu Arg Arg Pro Phe Arg Gln Val
    290                 295                 300
```

```
Leu Ala Gly Met Val His Arg Leu Leu Lys Arg Thr Pro Arg Pro Ala
305                 310                 315                 320

Ser Thr His Asp Ser Ser Leu Asp Val Ala Gly Met Val His Gln Leu
                325                 330                 335

Leu Lys Arg Thr Pro Arg Pro Ala Ser Thr His Asn Gly Ser Val Asp
            340                 345                 350

Thr Glu Asn Asp Ser Cys Leu Gln Gln Thr His
        355                 360
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<210> 3
<211> 419
<212> PRT
<213> Homo sapiens

<400> 3

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Met Leu Ala Ala Ala Phe Ala Asp Ser Asn Ser Ser Ser Met Asn Val
  1               5                  10                  15

Ser Phe Ala His Leu His Phe Ala Gly Gly Tyr Leu Pro Ser Asp Ser
             20                  25                  30

Gln Asp Trp Arg Thr Ile Ile Pro Ala Leu Leu Val Ala Val Cys Leu
         35                  40                  45

Val Gly Phe Val Gly Asn Leu Cys Val Ile Gly Ile Leu Leu His Asn
     50                  55                  60

Ala Trp Lys Gly Lys Pro Ser Met Ile His Ser Leu Ile Leu Asn Leu
 65                  70                  75                  80

Ser Leu Ala Asp Leu Ser Leu Leu Leu Phe Ser Ala Pro Ile Arg Ala
                 85                  90                  95

Thr Ala Tyr Ser Lys Ser Val Trp Asp Leu Gly Trp Phe Val Cys Lys
            100                 105                 110

Ser Ser Asp Trp Phe Ile His Thr Cys Met Ala Ala Lys Ser Leu Thr
        115                 120                 125

Ile Val Val Val Ala Lys Val Cys Phe Met Tyr Ala Ser Asp Pro Ala
    130                 135                 140

Lys Gln Val Ser Ile His Asn Tyr Thr Ile Trp Ser Val Leu Val Ala
145                 150                 155                 160

Ile Trp Thr Val Ala Ser Leu Leu Pro Leu Pro Glu Trp Phe Phe Ser
                165                 170                 175

Thr Ile Arg His His Glu Gly Val Glu Met Cys Leu Val Asp Val Pro
            180                 185                 190

Ala Val Ala Glu Glu Phe Met Ser Met Phe Gly Lys Leu Tyr Pro Leu
```

```
        195                 200                 205

Leu Ala Phe Gly Leu Pro Leu Phe Phe Ala Ser Phe Tyr Phe Trp Arg
    210                 215                 220

Ala Tyr Asp Gln Cys Lys Lys Arg Gly Thr Lys Thr Gln Asn Leu Arg
225                 230                 235                 240

Asn Gln Ile Arg Ser Lys Gln Val Thr Val Met Leu Leu Ser Ile Ala
                245                 250                 255

Ile Ile Ser Ala Val Leu Trp Leu Pro Glu Trp Val Ala Trp Leu Trp
            260                 265                 270

Val Trp His Leu Lys Ala Ala Gly Pro Ala Pro Pro Gln Gly Phe Ile
        275                 280                 285

Ala Leu Ser Gln Val Leu Met Phe Ser Ile Ser Ser Ala Asn Pro Leu
    290                 295                 300

Ile Phe Leu Val Met Ser Glu Glu Phe Arg Glu Gly Leu Lys Gly Val
305                 310                 315                 320

Trp Lys Trp Met Ile Thr Lys Lys Pro Pro Thr Val Ser Glu Ser Gln
                325                 330                 335

Glu Thr Pro Ala Gly Asn Ser Glu Gly Leu Pro Asp Lys Val Pro Ser
            340                 345                 350

Pro Glu Ser Pro Ala Ser Ile Pro Glu Lys Glu Lys Pro Ser Ser Pro
        355                 360                 365

Ser Ser Gly Lys Gly Lys Thr Glu Lys Ala Glu Ile Pro Ile Leu Pro
    370                 375                 380

Asp Val Glu Gln Phe Trp His Glu Arg Asp Thr Val Pro Ser Val Gln
385                 390                 395                 400

Asp Asn Asp Pro Ile Pro Trp Glu His Glu Asp Gln Glu Thr Gly Glu
                405                 410                 415

Gly Val Lys
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<210> 4
<211> 393
<212> PRT
<213> Homo sapiens

<400> 4

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Met Glu Thr Thr Met Gly Phe Met Asp Asp Asn Ala Thr Asn Thr Ser
  1               5                  10                  15

Thr Ser Phe Leu Ser Val Leu Asn Pro His Gly Ala His Ala Thr Ser
            20                  25                  30
```

```
Phe Pro Phe Asn Phe Ser Tyr Ser Asp Tyr Asp Met Pro Leu Asp Glu
         35                  40                  45

Asp Glu Asp Val Thr Asn Ser Arg Thr Phe Phe Ala Ala Lys Ile Val
     50                  55                  60

Ile Gly Met Ala Leu Val Gly Ile Met Leu Val Cys Gly Ile Gly Asn
 65                  70                  75                  80

Phe Ile Phe Ile Ala Ala Leu Val Arg Tyr Lys Lys Leu Arg Asn Leu
                 85                  90                  95

Thr Asn Leu Leu Ile Ala Asn Leu Ala Ile Ser Asp Phe Leu Val Ala
            100                 105                 110

Ile Val Cys Cys Pro Phe Glu Met Asp Tyr Tyr Val Val Arg Gln Leu
        115                 120                 125

Ser Trp Glu His Gly His Val Leu Cys Thr Ser Val Asn Tyr Leu Arg
    130                 135                 140

Thr Val Ser Leu Tyr Val Ser Thr Asn Ala Leu Leu Ala Ile Ala Ile
145                 150                 155                 160

Asp Arg Tyr Leu Ala Ile Val His Pro Leu Arg Pro Arg Met Lys Cys
                165                 170                 175

Gln Thr Ala Thr Gly Leu Ile Ala Leu Val Trp Thr Val Ser Ile Leu
            180                 185                 190

Ile Ala Ile Pro Ser Ala Tyr Phe Thr Thr Glu Thr Val Leu Val Ile
        195                 200                 205

Val Lys Ser Gln Glu Lys Ile Phe Cys Gly Gln Ile Trp Pro Val Asp
    210                 215                 220

Gln Gln Leu Tyr Tyr Lys Ser Tyr Phe Leu Phe Ile Phe Gly Ile Glu
225                 230                 235                 240

Phe Val Gly Pro Val Val Thr Met Thr Leu Cys Tyr Ala Arg Ile Ser
                245                 250                 255

Arg Glu Leu Trp Phe Lys Ala Val Pro Gly Phe Gln Thr Glu Gln Ile
            260                 265                 270

Arg Lys Arg Leu Arg Cys Arg Arg Lys Thr Val Leu Val Leu Met Cys
        275                 280                 285

Ile Leu Thr Ala Tyr Val Leu Cys Trp Ala Pro Phe Tyr Gly Phe Thr
    290                 295                 300

Ile Val Arg Asp Phe Phe Pro Thr Val Phe Val Lys Glu Lys His Tyr
305                 310                 315                 320

Leu Thr Ala Phe Tyr Ile Val Glu Cys Ile Ala Met Ser Asn Ser Met
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```
                325                 330                 335

Ile Asn Thr Leu Cys Phe Val Thr Val Lys Asn Asp Thr Val Lys Tyr
            340                 345                 350

Phe Lys Lys Ile Met Leu Leu His Trp Lys Ala Ser Tyr Asn Gly Gly
        355                 360                 365

Lys Ser Ser Ala Asp Leu Asp Leu Lys Thr Ile Gly Met Pro Ala Thr
    370                 375                 380

Glu Glu Val Asp Cys Ile Arg Leu Lys
385                 390
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<210> 5
<211> 1116
<212> DNA
<213> Homo sapiens

<400> 5
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tggggttcct tctactactc ctttaagact gagcaattga taactctgtg ggtcctcttt 180
gtttttacca ttgttggaaa ctccgttgtg ctttttttcca catggaggag aaagaagaag 240
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aacatcttga cagatattaa ttggcgattc actggagact tcacggcacc tgacctggtt 360
tgccgagtgg tccgctattt gcaggttgtg ctgctctacg cctctaccta cgtcctggtg 420
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<210> 6
<211> 1092
<212> DNA
<213> Homo sapiens

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tcaggcgtcc tcctggtgaa tctgtctctg ggccacctgc tgctggcggc gctggacatg 180
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cagacacact ga 1092

<210> 7
<211> 1260
<212> DNA
<213> Homo sapiens

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gctctcttgg tggctgtctg cctggtgggc ttcgtgggaa acctgtgtgt gattggcatc 180
ctccttcaca atgcttggaa aggaaagcca tccatgatcc actccctgat tctgaatctc 240
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aaaagtgttt gggatctagg ctggtttgtc tgcaagtcct ctgactggtt tatccacaca 360
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<210> 8
<211> 1182
<212> DNA
<213> Homo sapiens

<400> 8
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gactatgata tgcctttgga tgaagatgag gatgtgacca attccaggac gttctttgct 180
gccaagattg tcattgggat ggccctggtg ggcatcatgc tggtctgcgg cattggaaac 240
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<210> 9
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 9
atgccagcca acttcacaga gggcagct 28

<210> 10
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 10
ctagatgaat tctggcttgg acagaatc 28

<210> 11
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 11
atgggccccg gcgaggcgct gctggcgg 28

<210> 12
<211> 28
<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 12
tcagtgtgtc tgctgcaggc aggaatca 28

<210> 13
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 13
atgctggcag ctgcctttgc agactctaac 30

<210> 14
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 14
ctatttaaca ccttcccctg tctcttgatc 30

<210> 15
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 15
atggagacca ccatggggtt catggatg 28

<210> 16
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially

synthesized primer sequence

<400> 16
ttattttagt ctgatgcagt ccacctcttc 30

<210> 17
<211> 434
<212> PRT
<213> Homo sapiens

<400> 17

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Met Glu Asp Leu Phe Ser Pro Ser Ile Leu Pro Pro Ala Pro Asn Ile
  1               5                  10                  15

Ser Val Pro Ile Leu Leu Gly Trp Gly Leu Asn Leu Thr Leu Gly Gln
             20                  25                  30

Gly Ala Pro Ala Ser Gly Pro Pro Ser Arg Arg Val Arg Leu Val Phe
         35                  40                  45

Leu Gly Val Ile Leu Val Val Ala Val Ala Gly Asn Thr Thr Val Leu
     50                  55                  60

Cys Arg Leu Cys Gly Gly Gly Gly Pro Trp Ala Gly Pro Lys Arg Arg
 65                  70                  75                  80

Lys Met Asp Phe Leu Leu Val Gln Leu Ala Leu Ala Asp Leu Tyr Ala
                 85                  90                  95

Cys Gly Gly Thr Ala Leu Ser Gln Leu Ala Trp Glu Leu Leu Gly Glu
            100                 105                 110

Pro Arg Ala Ala Thr Gly Asp Leu Ala Cys Arg Phe Leu Gln Leu Leu
        115                 120                 125

Gln Ala Ser Gly Arg Gly Ala Ser Ala His Leu Val Val Leu Ile Ala
    130                 135                 140

Leu Glu Arg Arg Arg Ala Val Arg Leu Pro His Gly Arg Pro Leu Pro
145                 150                 155                 160

Ala Arg Ala Leu Ala Ala Leu Gly Trp Leu Leu Ala Leu Leu Leu Ala
                165                 170                 175

Leu Pro Pro Ala Phe Val Val Arg Gly Asp Ser Pro Ser Pro Leu Pro
            180                 185                 190

Pro Pro Pro Pro Pro Thr Ser Leu Gln Pro Gly Ala Pro Pro Ala Ala
        195                 200                 205

Arg Ala Trp Pro Gly Gln Arg Arg Cys His Gly Ile Phe Ala Pro Leu
    210                 215                 220

Pro Arg Trp His Leu Gln Val Tyr Ala Phe Tyr Glu Ala Val Ala Gly
225                 230                 235                 240
```

```
Phe Val Ala Pro Val Thr Val Leu Gly Val Ala Cys Gly His Leu Leu
                245                 250                 255

Ser Val Trp Trp Arg His Arg Pro Gln Ala Pro Ala Ala Ala Ala Pro
            260                 265                 270

Trp Ser Ala Ser Pro Gly Arg Ala Pro Ala Pro Ser Ala Leu Pro Arg
        275                 280                 285

Ala Lys Val Gln Ser Leu Lys Met Ser Leu Leu Leu Ala Leu Leu Phe
    290                 295                 300

Val Gly Cys Glu Leu Pro Tyr Phe Ala Ala Arg Leu Ala Ala Ala Trp
305                 310                 315                 320

Ser Ser Gly Pro Ala Gly Asp Trp Glu Gly Glu Gly Leu Ser Ala Ala
                325                 330                 335

Leu Arg Val Val Ala Met Ala Asn Ser Ala Leu Asn Pro Phe Val Tyr
            340                 345                 350

Leu Phe Phe Gln Ala Gly Asp Cys Arg Leu Arg Arg Gln Leu Arg Lys
        355                 360                 365

Arg Leu Gly Ser Leu Cys Cys Ala Pro Gln Gly Gly Ala Glu Asp Glu
    370                 375                 380

Glu Gly Pro Arg Gly His Gln Ala Leu Tyr Arg Gln Arg Trp Pro His
385                 390                 395                 400

Pro His Tyr His His Ala Arg Arg Glu Pro Leu Asp Glu Gly Gly Leu
                405                 410                 415

Arg Pro Pro Pro Pro Arg Pro Arg Pro Leu Pro Cys Ser Cys Glu Ser
            420                 425                 430

Ala Phe
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<210> 18
<211> 451
<212> PRT
<213> Homo sapiens

<400> 18

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Met Glu Ser Ser Pro Ile Pro Gln Ser Ser Gly Asn Ser Ser Thr Leu
  1               5                  10                  15

Gly Arg Val Pro Gln Thr Pro Gly Pro Ser Thr Ala Ser Gly Val Pro
             20                  25                  30

Glu Val Gly Leu Arg Asp Val Ala Ser Glu Ser Val Ala Leu Phe Phe
         35                  40                  45
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```
Met Leu Leu Leu Asp Leu Thr Ala Val Ala Gly Asn Ala Ala Val Met
     50                  55                  60

Ala Val Ile Ala Lys Thr Pro Ala Leu Arg Lys Phe Val Phe Val Phe
 65                  70                  75                  80

His Leu Cys Leu Val Asp Leu Leu Ala Ala Leu Thr Leu Met Pro Leu
                85                  90                  95

Ala Met Leu Ser Ser Ser Ala Leu Phe Asp His Ala Leu Phe Gly Glu
            100                 105                 110

Val Ala Cys Arg Leu Tyr Leu Phe Leu Ser Val Cys Phe Val Ser Leu
        115                 120                 125

Ala Ile Leu Ser Val Ser Ala Ile Asn Val Glu Arg Tyr Tyr Tyr Val
    130                 135                 140

Val His Pro Met Arg Tyr Glu Val Arg Met Thr Leu Gly Leu Val Ala
145                 150                 155                 160

Ser Val Leu Val Gly Val Trp Val Lys Ala Leu Ala Met Ala Ser Val
                165                 170                 175

Pro Val Leu Gly Arg Val Ser Trp Glu Glu Gly Ala Pro Ser Val Pro
            180                 185                 190

Pro Gly Cys Ser Leu Gln Trp Ser His Ser Ala Tyr Cys Gln Leu Phe
        195                 200                 205

Val Val Val Phe Ala Val Leu Tyr Phe Leu Leu Pro Leu Leu Leu Ile
    210                 215                 220

Leu Val Val Tyr Cys Ser Met Phe Arg Val Ala Arg Val Ala Ala Met
225                 230                 235                 240

Gln His Gly Pro Leu Pro Thr Trp Met Glu Thr Pro Arg Gln Arg Ser
                245                 250                 255

Glu Ser Leu Ser Ser Arg Ser Thr Met Val Thr Ser Ser Gly Ala Pro
            260                 265                 270

Gln Thr Thr Pro His Arg Thr Phe Gly Gly Gly Lys Ala Ala Val Val
        275                 280                 285

Leu Leu Ala Val Gly Gly Gln Phe Leu Leu Cys Trp Leu Pro Tyr Phe
    290                 295                 300

Ser Phe His Leu Tyr Val Ala Leu Ser Ala Gln Pro Ile Ser Thr Gly
305                 310                 315                 320

Gln Val Glu Ser Val Val Thr Trp Ile Gly Tyr Phe Cys Phe Thr Ser
                325                 330                 335

Asn Pro Phe Phe Tyr Gly Cys Leu Asn Arg Gln Ile Arg Gly Glu Leu
            340                 345                 350
```

```
Ser Lys Gln Phe Val Cys Phe Phe Lys Pro Ala Pro Glu Glu Glu Leu
        355                 360                 365

Arg Leu Pro Ser Arg Glu Gly Ser Ile Glu Glu Asn Phe Leu Gln Phe
    370                 375                 380

Leu Gln Gly Thr Gly Cys Pro Ser Glu Ser Trp Val Ser Arg Pro Leu
385                 390                 395                 400

Pro Ser Pro Lys Gln Glu Pro Pro Ala Val Asp Phe Arg Ile Pro Gly
                405                 410                 415

Gln Ile Ala Glu Glu Thr Ser Glu Phe Leu Glu Gln Gln Leu Thr Ser
            420                 425                 430

Asp Ile Ile Met Ser Asp Ser Tyr Leu Arg Pro Ala Ala Ser Pro Arg
        435                 440                 445

Leu Glu Ser
    450
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<210> 19
<211> 321
<212> PRT
<213> Homo sapiens

<400> 19

```
Met Asn Gln Thr Leu Asn Ser Ser Gly Thr Val Glu Ser Ala Leu Asn
  1               5                  10                  15

Tyr Ser Arg Gly Ser Thr Val His Thr Ala Tyr Leu Val Leu Ser Ser
             20                  25                  30

Leu Ala Met Phe Thr Cys Leu Cys Gly Met Ala Gly Asn Ser Met Val
         35                  40                  45

Ile Trp Leu Leu Gly Phe Arg Met His Arg Asn Pro Phe Cys Ile Tyr
     50                  55                  60

Ile Leu Asn Leu Ala Ala Ala Asp Leu Leu Phe Leu Phe Ser Met Ala
 65                  70                  75                  80

Ser Thr Leu Ser Leu Glu Thr Gln Pro Leu Val Asn Thr Thr Asp Lys
                 85                  90                  95

Val His Glu Leu Met Lys Arg Leu Met Tyr Phe Ala Tyr Thr Val Gly
            100                 105                 110

Leu Ser Leu Leu Thr Ala Ile Ser Thr Gln Arg Cys Leu Ser Val Leu
        115                 120                 125

Phe Pro Ile Trp Phe Lys Cys His Arg Pro Arg His Leu Ser Ala Trp
    130                 135                 140
```

```
Val Cys Gly Leu Leu Trp Thr Leu Cys Leu Leu Met Asn Gly Leu Thr
145                 150                 155                 160

Ser Ser Phe Cys Ser Lys Phe Leu Lys Phe Asn Glu Asp Arg Cys Phe
                165                 170                 175

Arg Val Asp Met Val Gln Ala Ala Leu Ile Met Gly Val Leu Thr Pro
            180                 185                 190

Val Met Thr Leu Ser Ser Leu Thr Leu Phe Val Trp Val Arg Arg Ser
        195                 200                 205

Ser Gln Gln Trp Arg Arg Gln Pro Thr Arg Leu Phe Val Val Val Leu
    210                 215                 220

Ala Ser Val Leu Val Phe Leu Ile Cys Ser Leu Pro Leu Ser Ile Tyr
225                 230                 235                 240

Trp Phe Val Leu Tyr Trp Leu Ser Leu Pro Pro Glu Met Gln Val Leu
                245                 250                 255

Cys Phe Ser Leu Ser Arg Leu Ser Ser Ser Val Ser Ser Ser Ala Asn
            260                 265                 270

Pro Val Ile Tyr Phe Leu Val Gly Ser Arg Arg Ser His Arg Leu Pro
        275                 280                 285

Thr Arg Ser Leu Gly Thr Val Leu Gln Gln Ala Leu Arg Glu Glu Pro
    290                 295                 300

Glu Leu Glu Gly Gly Glu Thr Pro Thr Val Gly Thr Asn Glu Met Gly
305                 310                 315                 320

Ala
```

<210> 20
<211> 333
<212> PRT
<213> Homo sapiens

<400> 20

```
Met Glu Lys Val Asp Met Asn Thr Ser Gln Glu Gln Gly Leu Cys Gln
  1               5                  10                  15

Phe Ser Glu Lys Tyr Lys Gln Val Tyr Leu Ser Leu Ala Tyr Ser Ile
             20                  25                  30

Ile Phe Ile Leu Gly Leu Pro Leu Asn Gly Thr Val Leu Trp His Phe
         35                  40                  45

Trp Gly Gln Thr Lys Arg Trp Ser Cys Ala Thr Thr Tyr Leu Val Asn
     50                  55                  60

Leu Met Val Ala Asp Leu Leu Tyr Val Leu Leu Pro Phe Leu Ile Ile
```

```
 65                  70                  75                  80

Thr Tyr Ser Leu Asp Asp Arg Trp Pro Phe Gly Glu Leu Leu Cys Lys
                 85                  90                  95

Leu Val His Phe Leu Phe Tyr Ile Asn Leu Tyr Gly Ser Ile Leu Leu
            100                 105                 110

Leu Thr Cys Ile Ser Val His Gln Phe Leu Gly Val Cys His Pro Leu
        115                 120                 125

Cys Ser Leu Pro Tyr Arg Thr Arg Arg His Ala Trp Leu Gly Thr Ser
    130                 135                 140

Thr Thr Trp Ala Leu Val Val Leu Gln Leu Leu Pro Thr Leu Ala Phe
145                 150                 155                 160

Ser His Thr Asp Tyr Ile Asn Gly Gln Met Ile Trp Tyr Asp Met Thr
                165                 170                 175

Ser Gln Glu Asn Phe Asp Arg Leu Phe Ala Tyr Gly Ile Val Leu Thr
            180                 185                 190

Leu Ser Gly Phe Leu Ser Leu Leu Gly His Phe Gly Val Leu Phe Thr
        195                 200                 205

Asp Gly Gln Glu Pro Asp Gln Ala Arg Gly Glu Pro His Glu Asp Arg
    210                 215                 220

Gln His Ser Pro Ser Gln Val His Pro Asp His Pro Thr Gly Val Trp
225                 230                 235                 240

Pro Leu His Pro Leu Phe Cys Ala Leu Pro Tyr His Ser Leu Leu Leu
                245                 250                 255

Pro His His Leu Leu Ser Ala Phe Ser Gly Leu Pro Ala Leu Asp Gly
            260                 265                 270

Ser Gln Cys Gly Leu Gln Asp Met Glu Ala Ser Gly Glu Cys Glu Gln
        275                 280                 285

Leu Pro Gln Pro Ser Pro Val Leu Ser Phe Lys Gly Gly Lys Asn Arg
    290                 295                 300

Val Arg Leu Leu Gln Lys Leu Arg Gln Asn Lys Leu Gly Glu His Pro
305                 310                 315                 320

Ala Gly Arg Lys Arg Cys Pro Gly Leu Asn Arg Ser Gly
                325                 330
```

<210> 21
<211> 508
<212> PRT
<213> Homo sapiens

<400> 21

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Met Thr Ser Thr Cys Thr Asn Ser Thr Arg Glu Ser Asn Ser Ser His
  1               5                  10                  15

Thr Cys Met Pro Leu Ser Lys Met Pro Ile Ser Leu Ala His Gly Ile
             20                  25                  30

Ile Arg Ser Thr Val Leu Val Ile Phe Leu Ala Ala Ser Phe Val Gly
         35                  40                  45

Asn Ile Val Leu Ala Leu Val Leu Gln Arg Lys Pro Gln Leu Leu Gln
     50                  55                  60

Val Thr Asn Arg Phe Ile Phe Asn Leu Leu Val Thr Asp Leu Leu Gln
 65                  70                  75                  80

Ile Ser Leu Val Ala Pro Trp Val Val Ala Thr Ser Val Pro Leu Phe
                 85                  90                  95

Trp Pro Leu Asn Ser His Phe Cys Thr Ala Leu Val Ser Leu Thr His
            100                 105                 110

Leu Phe Ala Phe Ala Ser Val Asn Thr Ile Val Val Val Ser Val Asp
        115                 120                 125

Arg Tyr Leu Ser Ile Ile His Pro Leu Ser Tyr Pro Ser Lys Met Thr
    130                 135                 140

Gln Arg Arg Gly Tyr Leu Leu Leu Tyr Gly Thr Trp Ile Val Ala Ile
145                 150                 155                 160

Leu Gln Ser Thr Pro Pro Leu Tyr Gly Trp Gly Gln Ala Ala Phe Asp
                165                 170                 175

Glu Arg Asn Ala Leu Cys Ser Met Ile Trp Gly Ala Ser Pro Ser Tyr
            180                 185                 190

Thr Ile Leu Ser Val Val Ser Phe Ile Val Ile Pro Leu Ile Val Met
        195                 200                 205

Ile Ala Cys Tyr Ser Val Val Phe Cys Ala Ala Arg Arg Gln His Ala
    210                 215                 220

Leu Leu Tyr Asn Val Lys Arg His Ser Leu Glu Val Arg Val Lys Asp
225                 230                 235                 240

Cys Val Glu Asn Glu Asp Glu Glu Gly Ala Glu Lys Lys Glu Glu Phe
                245                 250                 255

Gln Asp Glu Ser Glu Phe Arg Arg Gln His Glu Gly Glu Val Lys Ala
            260                 265                 270

Lys Glu Gly Arg Met Glu Ala Lys Asp Gly Ser Leu Lys Ala Lys Glu
        275                 280                 285

Gly Ser Thr Gly Thr Ser Glu Ser Ser Val Glu Ala Arg Gly Ser Glu
```

```
    290                 295                 300

Glu Val Arg Glu Ser Ser Thr Val Ala Ser Asp Gly Ser Met Glu Gly
305                 310                 315                 320

Lys Glu Gly Ser Thr Lys Val Glu Glu Asn Ser Met Lys Ala Asp Lys
                325                 330                 335

Gly Arg Thr Glu Val Asn Gln Cys Ser Ile Asp Leu Gly Glu Asp Asp
            340                 345                 350

Met Glu Phe Gly Glu Asp Asp Ile Asn Phe Ser Glu Asp Asp Val Glu
        355                 360                 365

Ala Val Asn Ile Pro Glu Ser Leu Pro Pro Ser Arg Arg Asn Ser Asn
    370                 375                 380

Ser Asn Pro Pro Leu Pro Arg Cys Tyr Gln Cys Lys Ala Ala Lys Val
385                 390                 395                 400

Ile Phe Ile Ile Ile Phe Ser Tyr Val Leu Ser Leu Gly Pro Tyr Cys
                405                 410                 415

Phe Leu Ala Val Leu Ala Val Trp Val Asp Val Glu Thr Gln Val Pro
            420                 425                 430

Gln Trp Val Ile Thr Ile Ile Ile Trp Leu Phe Phe Leu Gln Cys Cys
        435                 440                 445

Ile His Pro Tyr Val Tyr Gly Tyr Met His Lys Thr Ile Lys Lys Glu
    450                 455                 460

Ile Gln Asp Met Leu Lys Lys Phe Phe Cys Lys Glu Lys Pro Pro Lys
465                 470                 475                 480

Glu Asp Ser His Pro Asp Leu Pro Gly Thr Glu Gly Gly Thr Glu Gly
                485                 490                 495

Lys Ile Val Pro Ser Tyr Asp Ser Ala Thr Phe Pro
            500                 505
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<210> 22
<211> 1305
<212> DNA
<213> Homo sapiens

<400> 22
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ttgctgggct ggggtctcaa cctgaccttg gggcaaggag cccctgcctc tgggccgccc 120
agccgccgcg tccgcctggt gttcctgggg gtcatcctgg tggtggcggt ggcaggcaac 180
accacagtgc tgtgccgcct gtgcggcggc ggcgggccct gggcgggccc caagcgtcgc 240
aagatggact tcctgctggt gcagctggcc ctggcggacc tgtacgcgtg cgggggcacg 300
gcgctgtcac agctggcctg ggaactgctg ggcgagcccc gcgcggccac gggggacctg 360
gcgtgccgct tcctgcagct gctgcaggca tccgggcggg gcgcctcggc ccacctcgtg 420
gtgctcatcg ccctcgagcg ccggcgcgcg gtgcgtcttc cgcacggccg gccgctgccc 480

gcgcgtgccc tcgccgccct gggctggctg ctggcactgc tgctggcgct gcccccggcc 540
ttcgtggtgc gcggggactc cccctcgccg ctgccgccgc cgccgccgcc aacgtccctg 600
cagccaggcg cgcccccggc cgcccgcgcc tggccggggc agcgtcgctg ccacgggatc 660
ttcgcgcccc tgccgcgctg gcacctgcag gtctacgcgt tctacgaggc cgtcgcgggc 720
ttcgtcgcgc ctgttacggt cctgggcgtc gcttgcggcc acctactctc cgtctggtgg 780
cggcaccggc cgcaggcccc cgcggctgca gcgccctggt cggcgagccc aggtcgagcc 840
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gcgctgctgt tcgtgggctg cgagctgccc tactttgccg cccggctggc ggccgcgtgg 960
tcgtccgggc ccgcgggaga ctgggaggga gagggcctgt cggcggcgct gcgcgtggtg 1020
gcgatggcca acagcgctct caatcccttc gtctacctct tcttccaggc gggcgactgc 1080
cggctccggc gacagctgcg gaagcggctg ggctctctgt gctgcgcgcc gcagggaggc 1140
gcggaggacg aggaggggcc ccggggccac caggcgctct accgccaacg ctggccccac 1200
cctcattatc accatgctcg gcgggaaccg ctggacgagg gcggcttgcg cccacccccc 1260
ccgcgcccca gacccctgcc ttgctcctgc gaaagtgcct tctag 1305

<210> 23
<211> 1356
<212> DNA
<213> Homo sapiens

<400> 23
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caaaccccag gtccctctac tgccagtggg gtcccggagg tggggctacg ggatgttgct 120
tcggaatctg tggccctctt cttcatgctc ctgctggact tgactgctgt ggctggcaat 180
gccgctgtga tggccgtgat cgccaagacg cctgccctcc gaaaatttgt cttcgtcttc 240
cacctctgcc tggtggacct gctggctgcc ctgaccctca tgcccctggc catgctctcc 300
agctctgccc tctttgacca cgccctcttt ggggaggtgg cctgccgcct ctacttgttt 360
ctgagcgtgt gctttgtcag cctggccatc ctctcggtgt cagccatcaa tgtggagcgc 420
tactattacg tagtccaccc catgcgctac gaggtgcgca tgacgctggg gctggtggcc 480
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cagcacgggc cgctgcccac gtggatggag acaccccggc aacgctccga atctctcagc 780
agccgctcca cgatggtcac cagctcgggg gccccccaga ccaccccaca ccggacgttt 840
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cccagcccca agcaggagcc acctgctgtt gactttcgaa tcccaggcca gatagctgag 1260
gagacctctg agttcctgga gcagcaactc accagcgaca tcatcatgtc agacagctac 1320
ctccgtcctg ccgcctcacc ccggctggag tcatga 1356

<210> 24
<211> 966
<212> DNA
<213> Homo sapiens

<400> 24
atgaaccaga ctttgaatag cagtgggacc gtggagtcag ccctaaacta ttccagaggg 60
agcacagtgc acacggccta cctggtgctg agctccctgg ccatgttcac ctgcctgtgc 120
gggatggcag gcaacagcat ggtgatctgg ctgctgggct ttcgaatgca caggaacccc 180

ttctgcatct atatcctcaa cctggcggca gccgacctcc tcttcctctt cagcatggct 240
tccacgctca gcctggaaac ccagcccctg gtcaatacca ctgacaaggt ccacgagctg 300
atgaagagac tgatgtactt tgcctacaca gtgggcctga gcctgctgac ggccatcagc 360
acccagcgct gtctctctgt cctcttccct atctggttca agtgtcaccg gcccaggcac 420
ctgtcagcct gggtgtgtgg cctgctgtgg acactctgtc tcctgatgaa cgggttgacc 480
tcttccttct gcagcaagtt cttgaaattc aatgaagatc ggtgcttcag ggtggacatg 540
gtccaggccg ccctcatcat gggggtctta accccagtga tgactctgtc cagcctgacc 600
ctctttgtct gggtgcggag gagctcccag cagtggcggc ggcagcccac acggctgttc 660
gtggtggtcc tggcctctgt cctggtgttc ctcatctgtt ccctgcctct gagcatctac 720
tggtttgtgc tctactggtt gagcctgccg cccgagatgc aggtcctgtg cttcagcttg 780
tcacgcctct cctcgtccgt aagcagcagc gccaaccccg tcatctactt cctggtgggc 840
agccggagga gccacaggct gcccaccagg tccctgggga ctgtgctcca acaggcgctt 900
cgcgaggagc ccgagctgga aggtggggag acgcccaccg tgggcaccaa tgagatgggg 960
gcttga 966

<210> 25
<211> 1002
<212> DNA
<213> Homo sapiens

<400> 25
atggagaagg tggacatgaa tacatcacag gaacaaggtc tctgccagtt ctcagagaag 60
tacaagcaag tctacctctc cctggcctac agtatcatct ttatcctagg gctgccacta 120
aatggcactg tcttgtggca cttctggggc caaaccaagc gctggagctg tgccaccacc 180
tatctggtga acctgatggt ggccgacctg ctttatgtgc tattgccctt cctcatcatc 240
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ctgggcacca gcaccacctg ggccctggtg gtcctccagc tgctgcccac actggccttc 480
tcccacacgg actacatcaa tggccagatg atctggtatg acatgaccag ccaagagaat 540
tttgatcggc tttttgccta cggcatagtt ctgacattgt ctggctttct ttcctcctt 600
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catgaggaca ggcaacacag cccgagccag gtccatccgg accatcctac tggtgtgtgg 720
cctcttcacc ctctgttttg tgcccttcca tatcactcgc tccttctacc tcaccatctg 780
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ggcaaaaata gagtcaggct cctccagaaa ctgaggcaga acaagttggg tgagcatcca 960
gctgggagga agagatgccc agggttgaac agatctgggt aa 1002

<210> 26
<211> 1527
<212> DNA
<213> Homo sapiens

<400> 26
atgacgtcca cctgcaccaa cagcacgcgc gagagtaaca gcagccacac gtgcatgccc 60
ctctccaaaa tgcccatcag cctggcccac ggcatcatcc gctcaaccgt gctggttatc 120
ttcctcgccg cctctttcgt cggcaacata gtgctggcgc tagtgttgca gcgcaagccg 180
cagctgctgc aggtgaccaa ccgttttatc tttaacctcc tcgtcaccga cctgctgcag 240
atttcgctcg tggcccctg ggtggtggcc acctctgtgc ctctcttctg gcccctcaac 300
agccacttct gcacggccct ggttagcctc acccacctgt tcgccttcgc cagcgtcaac 360
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tccaagatga cccagcgccg cggttacctg ctcctctatg gcacctggat tgtggccatc 480
ctgcagagca ctcctccact ctacggctgg ggccaggctg cctttgatga gcgcaatgct 540

ctctgctcca tgatctgggg ggccagcccc agctacacta ttctcagcgt ggtgtccttc 600
atcgtcattc cactgattgt catgattgcc tgctactccg tggtgttctg tgcagcccgg 660
aggcagcatg ctctgctgta caatgtcaag agacacagct tggaagtgcg agtcaaggac 720
tgtgtggaga atgaggatga agagggagca gagaagaagg aggagttcca ggatgagagt 780
gagtttcgcc gccagcatga aggtgaggtc aaggccaagg agggcagaat ggaagccaag 840
gacggcagcc tgaaggccaa ggaaggaagc acggggacca gtgagagtag tgtagaggcc 900
aggggcagcg aggaggtcag agagagcagc acggtggcca gcgacggcag catggagggt 960
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atcttcatca tcatttttctc ctatgtgcta tccctggggc cctactgctt tttagcagtc 1260
ctggccgtgt gggtggatgt cgaaacccag gtaccccagt gggtgatcac cataatcatc 1320
tggcttttct tcctgcagtg ctgcatccac ccctatgtct atggctacat gcacaagacc 1380
attaagaagg aaatccagga catgctgaag aagttcttct gcaaggaaaa gcccccgaaa 1440
gaagatagcc acccagacct gcccggaaca gagggtggga ctgaaggcaa gattgtccct 1500
tcctacgatt ctgctacttt tccttga 1527

<210> 27
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 27
atggaggatc tctttagccc ctcaattc 28

<210> 28
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 28
ctagaaggca ctttcgcagg agcaaggc 28

<210> 29
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 29
atggagtcct cacccatccc ccagtcatc 29

<210> 30
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 30
tcatgactcc agccggggtg aggcggcag 29

<210> 31
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 31
atgaaccaga ctttgaatag cagtgg 26

<210> 32
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 32
tcaagccccc atctcattgg tgcccacg 28

<210> 33
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 33
atggagaagg tggacatgaa tacatcac 28

<210> 34
<211> 29

<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 34
ttacccagat ctgttcaacc ctgggcatc 29

<210> 35
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 35
atgacgtcca cctgcaccaa cagcacgc 28

<210> 36
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 36
tcaaggaaaa gtagcagaat cgtaggaag 29

<210> 37
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 37
ccaggagcgt ttctatgcct 20

<210> 38
<211> 20
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 38
tgtgatcttt gctcccctgca 20

<210> 39
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (28)
<223> Label TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 39
tcagaacctg ccagcattga atagtgcc 28

<210> 40
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 40
atctgctttg ccccgtatgt 20

<210> 41
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 41
accgccttgc tgtaggtcag 20

<210> 42
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (22)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 42
tcgtgccctt cgtcaccgtg aa 22

<210> 43
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 43
cccagcatcc ataccagaaa a 21

<210> 44
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 44
ctgtgtccct ctcatgccaa a 21

<210> 45
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (28)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 45
tgagaaggca gagattccca tccttcct 28

<210> 46
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 46
tcgccatgag caacagcat 19

<210> 47
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 47
cactggactt accgccattg t 21

<210> 48
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding

<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (29)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 48
agatcatgtt gctccactgg aaggcttct 29

<210> 49
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 49
ggatctcttt agcccctcaa ttc 23

<210> 50
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 50
aaggtcaggt tgagacccca g 21

<210> 51
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (25)

<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 51
aacatttccg tgcccatctt gctgg 25

<210> 52
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 52
gctgttgact ttcgaatccc a 21

<210> 53
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 53
acggaggtag ctgtctgaca tga 23

<210> 54
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (26)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 54
tgagttcctg gagcagcaac tcacca 26

<210> 55
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 55
ggctttcgaa tgcacaggaa 20

<210> 56
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 56
ggaagccatg ctgaagagga 20

<210> 57
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (28)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 57
ttctgcatct atatcctcaa cctggcgg 28

<210> 58
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 58
tggcctcttc accctctgtt t 21

<210> 59
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 59
atcaagagct ggcagtcctg a 21

<210> 60
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (30)
<223> Label TAMRA
(6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 60
tccatatcac tcgctccttc tacctcacca 30

<210> 61
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially
synthesized primer sequence

<400> 61
ccaaaatgcc catcagcct 19

<210> 62
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized primer sequence

<400> 62
gcactatgtt gccgacgaaa 20

<210> 63
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:an artificially synthesized TaqMan probe sequence

<220>
<221> misc_binding
<222> (1)
<223> Label FAM (6-carboxy-fluorescein)

<220>
<221> misc_binding
<222> (26)
<223> Label TAMRA (6-carboxy-N,N,N',N'-tetramethylrhodamine)

<400> 63
catccgctca accgtgctgg ttatct 26